

CLAIMS

What is claimed is:

1. A method for associating a subscriber with one of a plurality of port bundles, comprising:
  - 5       reserving one of said plurality of port bundles for said subscriber if said subscriber has not been assigned one of said plurality of port bundles;  
          changing an original source port number in a data packet to a port bundle number;  
          modifying a subscriber address in said data packet to an assigned aggregation address;
  - 10       issuing a request to a remote management device for authentication of said subscriber;  
          receiving a response from the management device including a state of authentication of said subscriber;  
          mapping said subscriber to said reserved port bundle in a port bundle object; and
  - 15       assigning said reserved port bundle to said subscriber if said subscriber is authenticated.
2. The method of claim 1 wherein each of said plurality of port bundles includes a port bundle length, a port number, and an assigned aggregation address.
- 20       3. The method of claim 2 wherein said port bundle number includes a range of sequential port numbers starting with a base port number.

4. The method of claim 3 wherein said range of sequential port numbers is approximated by

$$\text{range of sequential port numbers} = 2^{\text{port bundle length}}$$

5 5. The method of claim 2 wherein said port bundle length is an integer in a range of 1 to 16.

6. The method of claim 1, further comprising maintaining a status for said subscriber.

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7. The method of claim 6, further comprising signaling said status to said management device.

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8. The method of claim 6 wherein said status indicates whether said subscriber is logged-on or logged-off.

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9. The method of claim 1, further comprising:  
changing said assigned aggregation address to said subscriber address;  
resetting said port number to said original source port number; and  
transmitting said data packet to said subscriber.

10. An apparatus for associating a subscriber with one of a plurality of port bundles, comprising:

at least one source port to receive at least one data packet, said data packet having a subscriber address;

each of said plurality of port bundles coupled to said source port;

5 a plurality of memories, each of said plurality of memories coupled to one of said plurality of port bundles;

a port bundle object in each of said plurality of memories to associate said subscriber with said port bundle;

a processor coupled to said plurality of port bundles; and

10 an output port coupled to said processor.

11. The apparatus of claim 10 wherein each of said plurality of port bundles includes a port bundle length, a port number, and an assigned aggregation address.

15 12. The apparatus of claim 11 wherein said base port number includes a range of sequential port numbers starting with a base port number.

13. The apparatus of claim 12 wherein said range of sequential numbers is approximated by

20  $\text{range of sequential port numbers} = 2^{\text{port bundle length}}$

14. The apparatus of claim 11 wherein said port bundle length is an integer in a range of 1 to 16.

15. The apparatus of claim 12 wherein said base port number signals the status of said subscriber.

5 16. An apparatus for associating a subscriber with one of a plurality of port bundles, comprising:

means for reserving one of said plurality of port bundles for said subscriber if said subscriber has not been assigned one of said plurality of port bundles;

10 means for changing an original source port number in a data packet to a port bundle number;

means for modifying a subscriber address in said data packet to an assigned aggregation address;

means for issuing a request to a remote management device for authentication of said subscriber;

15 means for receiving a response from the management device including a state of authentication of said subscriber;

means for mapping said subscriber to said reserved port bundle in a port bundle object; and

20 means for assigning said reserved port bundle to said subscriber if said subscriber is authenticated.

17. The apparatus of claim 16 wherein each of said plurality of port bundles includes a port bundle length, a port number, and an assigned aggregation address.

18. The apparatus of claim 17 wherein said port bundle number includes a range of sequential port numbers starting with a base port number.

5 19. The apparatus of claim 18 wherein said range of sequential port numbers is approximated by

$$\text{range of sequential port numbers} = 2^{\text{port bundle length}}$$

10 20. The apparatus of claim 17 wherein said port bundle length is an integer in a range of 1 to 16.

21. The apparatus of claim 15, further comprising means for maintaining a status for said subscriber.

15 22. The apparatus of claim 21, further comprising means for signaling said status to said management device.

23. The apparatus of claim 21 wherein said status indicates whether said subscriber is logged-on or logged-off.

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24. The apparatus of claim 15, further comprising:  
means for changing said assigned aggregation address to said subscriber address;

means for resetting said port number to said original source port number; and  
means for transmitting said data packet to said subscriber.

25. A program storage device readable by a machine, tangibly embodying a program  
5 of instructions executable by the machine to perform a method for associating a  
subscriber with a port bundle, said method comprising:

reserving one of said plurality of port bundles for said subscriber if said  
subscriber has not been assigned one of said plurality of port bundles;

changing an original source port number in a data packet to a port bundle number;

10 modifying a subscriber address in said data packet to an assigned aggregation  
address;

issuing a request to a remote management device for authentication of said  
subscriber;

15 receiving a response from the management device including a state authentication  
of said subscriber;

mapping said subscriber to said reserved port bundle in a port bundle object; and

assigning said reserved port bundle to said subscriber if said subscriber is  
authenticated.